Supplementary Table 5: Description of interventions and equity-related findings from 15 quantitative studies

Author, publication year, study location	Intervention	Study design, sample, and strength	Equity dimensions	Equity analyses	Findings on equity effects, intervention strategies and contextual factors
Home visit interventions					
Baqui et al. 2008; Barabanki and Unnao districts, Uttar Pradesh, India	NGO supported Integrated Nutrition and Health Programme; trained CHWs *(*auxiliary nurse midwives*, anganwadi* workers, community volunteers) to conduct two antenatal home visits (birth planning, immunisation, iron/folic acid tablets), and postnatal visits (clean cord care, early breastfeeding, newborn danger sign recognition, delayed bathing & thermal care); community volunteers provided supportive supervision for CHWs.	Pre-post household surveys in one intervention district and one control district (matched on size & population characteristics). Within districts, random selection of blocks (9 in intervention, 8 in control). One sector (20,000-25,000 population) per block randomly selected; all households in block included. Random selection of women with live birth or stillbirth in the reference period (2001–02 for baseline and 2004–05 for endline). *Moderate quality*	Principal Components Analysis (PCA)-based asset index (wealth quintiles). PCA included: drinking water source; type of sanitation facilities; electricity; materials of the house; number of rooms; number of livestock, ownership of various household items.	Coverage and behavioural effects reported at baseline and endline for intervention and control, by wealth quintile (only poorest and richest quintile reported here). Comparison of concentration indices (CoI.) for behavioural practices (essential newborn care practices, health care utilisation) at baseline and endline for comparison and intervention district.	**Coverage:** Antenatal home visit coverage: improved and more equitable in intervention district. Intervention district: baseline vs endline for poorest: 10.7% vs 51.4%; baseline vs endline for richest: 20.8% vs 57.7%. Change in CoI: -0.172 (95% CI: -0.200, -0.143). Control district: baseline vs endline for poorest: 21.3% vs 16.8%, baseline vs endline for richest: 25.2% vs 26.1%. Change in CoI: 0.058 (95% CI: 0.020, 0.095). Postnatal home coverage visits: improved and more equitable in intervention district. Intervention district: baseline vs endline for poorest: 2.1% vs 37.5%, baseline vs endline for richest: 5.4% vs 39.9%; change in CoI: -0.225 (95% CI: -0.289, -0.161). Control district: baseline vs endline for poorest: 4.5% vs 4.4%; baseline vs endline for richest: 8.8% vs 8.8%. No significant change in CoI. **Effects on behaviours**: Birth preparation: improved and more equitable in intervention district: baseline vs endline for poorest: 5.3% vs 18.4%, baseline vs endline for richest: 11.9% vs 29.4%; change in CoI: -0.095 (95% CI:

| | | | | | -0.144, -0.047). Control district: baseline vs endline for poorest: 13.0% vs 9.5%, and richest: 26.5% vs 26.7%. Change in CoI: 0.068 (95% CI: 0.025, 0.112).

Medically trained birth attendant: significant equitable improvement by endline in intervention but not control district. Intervention district: baseline vs. endline for poorest: 7.4% vs 13.7%, and for richest: 33.2% vs 38.7%. Change in CoI: -0.095 (95% CI: -0.128, -0.063). Control district: baseline vs endline for poorest: 8.6% vs 9.5%, and for richest: 35.9% vs 46.3%. No significant change in CoI.

Newborn care: Clean cord care, delayed bathing, wiping and wrapping were improved and more equitable in intervention district but not in control district, while immediate breastfeeding improved equitably in both but more in the intervention district. Clean cord care: intervention baseline vs endline for poorest: 28.6% vs 67.8%, and richest: 37.4% vs 69.5%; change in CoI: -0.106 (95% CI:-0.125, -0.087). Immediate breastfeeding: intervention baseline vs endline for poorest: 2.3% vs 37.4%, for richest: 5.3% vs 37.4%; change in CoI: -.261 (95% CI: -0.331, -0.191). Control district baseline vs endline for poorest: 1.0% vs 4.1%, and for richest: 4.9% vs 8.8%; change in CoI: -0.161 (95% CI: -0.263, -0.059). |
| *Callaghan-Koru et al. 2012; Malawi* | Malawi Ministry of Health's expanded Community-Based Maternal and Newborn Care (CBMNC) program trained Health Surveillance Assistants | Pre-post surveys in three intervention districts (in 2007 and 2011). 900 women aged 15-49 years in each survey selected using two-stage cluster | PCA-based asset index (wealth quartiles). PCA included: toilet facilities, electricity, cooking fuel, roof | Coverage reported at endline by wealth quartile (only poorest and richest reported here). | **Coverage:** inequitable coverage of ANC by HSA, equitable (but low) coverage of PNC by HSA, and ANC by core group, similar knowledge of intervention.

1+ Antenatal home visit coverage by HSA: |

(HSAs, each serving 1000 population) for 10-12 weeks + 10 days to conduct three home visits in pregnancy, and three in the first week of life, to promote nutrition, birth preparedness and complication readiness, antenatal care (ANC), family planning, postnatal care (PNC) and danger sign recognition. HSAs trained in community mobilisation to develop core groups of community members to conduct health education, demand generation and to inform HSAs of pregnancies and deliveries. Facility staff also trained to give counseling on newborn care and resuscitation, kangaroo mother care, and referral for newborn illness.	sampling (clusters selected using probability proportional to size, then households selected with Expanded Programme on Immunisation random walk method). *Moderate quality*	and wall materials, and ownership of household items.	Health knowledge and behaviours reported at baseline and endline by wealth quartile. CoI. and changes in CoI. between baseline and endline for each indicator calculated and tested for significance using t-tests.	endline only, for poorest: 29.0%, richest: 42.8%; CoI: 0.079 (95% CI: 0.031, 0.127). 2+ Antenatal home visits coverage by HSA: endline only, for poorest: 16.3%, richest: 26.2%; CoI: 0.0960 (95% CI: 0.022, 0.170). Antenatal home visit coverage by core group member: endline only, for poorest: 6.2%, richest: 10.2%; CoI: 0.102 (95% CI: -0.009, 0.212) 1+ postnatal home visit by HSA: endline only, for poorest: 7.8%; richest: 11.9%; CoI: 0.093 (95% CI: -0.024, 0.210). 2+ postnatal home visits by HSA: endline only, for poorest: 2.7%, richest: 2.7%; CoI: -0.040 (95% CI: -0.153, 0.073). Knowledge of "core group" present in community: endline only, for poorest: 33.8%, richest: 36.0%. CoI: 0.0241 (95% CI: -0.041, 0.089). **Effects on health knowledge:** knowledge increased substantially and equitably. Knowledge of 3+ danger signs: in *pregnancy*, endline only, for poorest: 46.7%, richest: 39.6%, change in CoI: -0.170 (95% CI: -0.295, -0.046); in *delivery*, endline only, for poorest: 18.2%, richest: 12.9%, change in CoI: -0.246 (95% CI: -0.473, -0.019); in *postpartum period*, endline only, for poorest: 34.7%, richest: 31.6%, change in CoI: -0.417 (95% CI: -0.704, -0.129). **Effects on behaviours:** Health behaviors improved equitably. At least 1 ANC with skilled provider: endline only, for poorest: 93.3%, richest: 96.0%,

					change in CoI: -0.020 (95% CI: -0.042, 0.002).
					Institutional delivery: endline only, for poorest: 88.4%, richest: 92.9%, change in CoI: -0.059 (95% CI: -0.098, -0.020).
					Breastfeeding within 1 hour: endline only, for poorest: 92.4%, richest: 94.2%, change in CoI: -0.038 (95% CI: -0.073, -0.003).
					Delayed bathing for at least 6 hours: endline only, for poorest: 84.0%, richest: 77.3%, change in CoI: -0.041 (95% CI: -0.095, -0.014).
					The low and inequitable coverage of prenatal home visits by endline may be due in part to some HSAs not always residing in the same village in which they worked, particularly when the villages were remote. Health facility strengthening at government hospitals may have played a role in improved newborn care, particularly among the poor who were less likely to rely on private services not covered by the program. The HSAs' increasing workloads may have reduced their ability to cover the poorest or marginalised households. Core groups were not highly active in the villages to link the community, HSAs and the health system.
Kosec et al. 2015; Bihar, India	CHWs (*anganwadi* workers or AWWs and Accredited Social Health Activists or ASHAs) trained to provide: 1) immunisation information and services, 2) food	Cross-sectional survey 6002 households in 400 randomly selected villages in 14 blocks of Bhojpur district, Bihar; 377 AWWs and 382 ASHAs *Low quality*	Explanatory socio-economic variables: household head education, household economic wealth quintile, caste of household head	Logistic regression models for each of the outcomes, adjusting for different explanatory variables	**Coverage**: Receipt of immunisation and food supplements: 31% and 13% of households received immunisations and food supplements respectively. - Receipt of immunisation services significantly associated with household head having education over 7

	supplements, 3) pregnancy care information, and 4) nutrition information to lactating mothers through home visits, immunisations, and Village Health and Nutrition Days			expected to affect the outcomes.	standards (OR: 1.39, 95% CI: 1.05, 1.82, p=0.02) but not household SES index (OR: 1.04; 95% CI: 0.94, 1.15, p=0.41). Significantly associated with caste match between families and ASHAs (OR: 1.86; 95% CI: 1.05, 3.31, p=0.03). - Receipt of food supplements lower for those with household education over 7 standards compared to less (OR: 0.84; 95% CI: 0.63, 1.11) and household SES (OR: 0.87; 95% CI: 0.79, 0.96, p-value=0.007). Receipt of pregnancy or nutrition-related information: 11% and 5% of households received pregnancy or nutrition information respectively. - Household and village characteristics were not important predictors of receipt of information.
Quayyum et al. 2013; Rural areas of five districts in Bangladesh	IMNCS program started in 2008 by Bangladesh Rural Advancement Committee (BRAC). CHWs selected from rural communities to create demand and provide maternal and neonatal health services. Provided free domiciliary services to pregnant and breastfeeding mothers, neonates and under-five children, and referred complications to public facilities. Provided financial	Quasi-experimental (intervention vs control) and pre-post (2008 vs 2010) comparison of cross-sectional surveys. Total sample: 4190 2008 and 2010 samples in intervention areas: 1484 and 984; and control areas: 1046 and 676 *Moderate quality*	Socio-demographic variables: age, marital status, literacy, male household head, mean household size, and PCA-based household asset index to create wealth quintiles.	Difference-in-differences (DiD) estimation used to compare outcomes between 2008 and 2010.	**Effects on behaviours:** Utilisation of 4+ ANC: by endline, significant and equitable improvement between lowest (62.2%) and highest (76.2%) wealth quintiles in intervention area (change in CoI: -0.268, 95% CI: -0.368, -0.168) but not in comparison area. Utilisation of ANC by trained provider: by endline, marginally significantly more equitable between wealth quintiles in intervention area (change in CoI: -0.088, 95% CI: -0.135, -0.041), but not in comparison area. Skilled birth attendance at home: by endline, significant pro-equitable improvement between wealth quintiles in intervention area (change in CoI: -0.094,

	support for medicines, blood transfusion and transportation based on economic need. In comparison areas, women received essential health care but not intensive maternal care and referral support.				95% CI: -0.190, 0.002), but insignificant in comparison area. Normal delivery at public facility: by endline, low and insignificantly more equitable between lowest (6.1%) and highest (10.3%) wealth quintiles (change in CoI: -0.228; 95% CI:-0.620, 0.160), which was also the case in comparison areas. Normal delivery at private facility: by endline, low but marginally more equitable between lowest (1.1%) and highest (4.9%) wealth quintile in intervention area (change in CoI: -0.112; 95% CI: -0.473, 0.249) but less equitable in comparison area (change in CoI: 0.358; 95% CI: 0.142, 0.574). Utilisation of PNC within 48 hours: by endline, significantly more equitable in intervention area (change in CoI: -0.228; 95% CI: -0.436, -0.020), but not significantly different in comparison area.
Rajbhandari et al. 2010; Banke district, Nepal	CHWs trained to identify pregnant women, and provide them prenatal health education, misoprostol (three 200 microgram tablets) late in pregnancy (8th month), and early postnatal home visits.	Household surveys at baseline (2005) and endline (2007). Sample: 900 recently delivered women (visited 5935 households at baseline, 4964 at endline). *Moderate quality*	Socio-economic factors: wealth, literacy, remoteness. PCA-based household asset indices used to create wealth quintiles.	Logistic regression models, adjusting for household wealth, literacy, and cluster design effects.	**Coverage**: Uterotonic protection (oxytocin and misoprostol): increased from 11.6% to 74.2% for vaginal deliveries overall, with greatest gain in the two lowest wealth quintiles. However at endline, the highest wealth quintile had significantly higher coverage than the lowest quintile (p=0.049). Baseline literate vs illiterate OR: 3.3 (95% CI: 2.1, 5.1), but at endline, literate vs illiterate OR: 1.2 (95% CI, 0.8, 1.8).
Seth et al. 2017; Uttar Pradesh, India	National Health Mission programme trained CHWs (ASHAs) to deliver basic health services, health education, and	Cross-sectional survey 4912 women who gave birth within the last 12 months in 150 blocks of 25 districts of Uttar	Caste (Scheduled Caste/Tribe; Other Backward Class; or General Caste status), religion (Muslim	Univariate and multivariate logistic regression modelling to assess equity	**Coverage:** Equitable coverage of any ASHA contacts during pregnancy between all socio-economic groups. **Effects on behaviours:** 4+ ANC: Adjusted associations between

	promote antenatal care and facility delivery for all households with pregnant women.	Pradesh *Moderate quality*	vs. non-Muslim), household wealth (using dichotomized Standard of Living Index), women's literacy status (illiterate vs. literate)	in coverage of any ASHA contacts in pregnancy; interaction and stratified analyses to assess whether socio-economic variables modified associations between ASHA contact and behavioural outcomes (four or more ANC visits and facility delivery).	any ASHA contact and odds of having four or more ANC check-ups was significantly modified by women's religion (p=0.02), and wealth (p<0.0001). Among non-Muslim women, any ASHA contact significantly increased odds of 4+ ANC (OR: 1.85; 95% CI: 1.33, 2.58) but not for Muslim women. Among women with lower wealth scores, any ASHA contact significantly increased odds of 4+ ANC (OR: 2.24; 95% CI: 1.66, 3.03) but not those with higher wealth. Facility delivery: Adjusted associations between any ASHA contact and odds of facility delivery was significantly modified by women's wealth (p<0.01) and literacy (p=0.003). Among women with low wealth, any ASHA contact significantly increased odds of facility delivery (OR: 2.11; 95% CI: 1.71, 2.60), but not for women in high wealth group. Among women who were not literate, any ASHA contact increased the odds of facility delivery significantly (OR: 2.34; 95% CI: 1.83, 3.02). Among literate women any ASHA contact also increased odds of facility delivery significantly but to a lesser extent (OR: 1.33; 95% CI: 1.02, 1.71)
Singh et al. 2010; one rural block in Lucknow district, UP, India	National Health Mission programme trained and incentivised CHWs (ASHAs) to facilitate birth registration, ANC and PNC check-ups for	Cross-sectional study in 2007-2008. Sample: 350 women who recently delivered a baby in the past one week, interviewed at one week and again	Socio-economic characteristics: caste (Scheduled Caste, Other Backward Class and General Caste), religion (Hindu/ Muslim),	Multiple logistic regression modeling was used to examine utilisation of ASHA services	**Coverage**: Utilisation of ASHA services for early registration: significantly lower among those with higher compared to lower socio-economic class (OR: 0.47, p-value=0.55), high school education compared to illiterate (OR: 0.32, p-value=0.21), and higher

| | pregnant women. | after six months to assess postnatal care.

Low quality | maternal education (illiterate, primary, middle or high school), and socio-economic class (composite Pareek scale, based on caste, occupation, education, social participation of household head, landholding, housing, farm power, material possessions, family members) | for birth registration, ANC and PNC check-ups, compared by women's caste, religion, education and socio-economic class. | among Hindu compared to Muslim (OR: 4.41, p=0.05). Women of Scheduled Castes utilised services most but this was not significantly different from women of General Castes.

<u>Utilisation of ASHA services for ANC</u>: not significantly different by socio-economic class, maternal education or caste.

<u>Utilisation of ASHA services for PNC</u>: not significantly different by socio-economic class, maternal education or caste.

(*Insignificance of p-values may be due to low sample size.*) |
|---|---|---|---|---|---|
| *Cash transfer interventions facilitated by CHWs* | | | | | |
| *Nguyen et al. 2012; Bangladesh* | Voucher programme to encourage utilisation of maternal health services, giving free access to three antenatal check-ups, safe delivery in home or hospital, emergency obstetric care, and one postnatal checkup. CHWs incentivised to recruit women to the program ($0.15 for each eligible woman). | Cross-sectional survey (in 2009) in 16 intervention sub-districts (since 2007), and 16 control sub-districts, matched based on geographical proximity, number of beds in the sub-district hospital, and literacy rates.

Villages with highest number of deliveries in each sub-district selected, and all women who delivered within the last six months there were identified.

Sample: 2208

Moderate quality | PCA-based asset index, including: electricity, radio, television, mobile/land phone, refrigerator, furniture, watch, bicycle, motorcycle, animal-drawn or motorised vehicles, livestock, material of the roof, and ownership of land and homestead. Wealth quintiles using asset index. | Multivariate analyses with robust standard errors, estimating marginal effects of the intervention overall and stratified by wealth (lowest quintile compared to four higher quintiles). | **Effects on behaviours**:

<u>Utilisation of maternal health services</u>: adjusted marginal effect of intervention on any ANC, skilled delivery, and PNC was stronger for poorest wealth quintile compared to higher four quintiles.

- ANC with qualified provider: marginal effect was stronger for poor (43%; 95% CI: 25-61%) vs non-poor quintiles (22%; 95% CI: 13-30%).

- Delivery with qualified provider: marginal effect was stronger for poor (68%; 95% CI: 55-81%) vs non-poor quintiles (42%; 95% CI: 33-50%).

- PNC with qualified provider: marginal effect was stronger for poor (25%; 95% CI: 13-38%) vs non-poor wealth quintiles (17%; |

					95% CI: 10-25%).
					The study discussed that the voucher scheme promoted by CHWs may have improved demand by addressing economic barriers to utilisation for the poorest groups. However they also report that even with the voucher scheme, families still incurred expenses so that these financial barriers were not completely removed.
Powell-Jackson et al. 2009; Makwanpur district, Nepal	Safe Delivery Incentive Programme (SDIP) package of financial benefits included: i) a conditional cash transfer (CCT) for institutional delivery, and ii) incentive to health workers for skilled birth attendance either at home or in facility.	Cluster randomised controlled trial, using community surveillance system data. Household survey collected for seven years. Sample: 14,799 deliveries in 24 local administrative areas (Village Development Committees, VDCs) *Moderate quality*	Socio-economic factors: women's age, religion, ethnicity, educational attainment, occupation of household head, size of household, materials for house and number of months the household had sufficient food in the past year.	Regression models, stratified by villages having women's groups or not at start of the programme.	**Coverage**: receipt of CCT in the first two years was higher for those with greater wealth and more education. More educated women may have been more able to fill required forms to receive CCT. When not controlling for place of delivery, wealth was significantly related to CCT receipt. CCT appeared to benefit wealthier first among rural poor sample of women.
Community group interventions					
Houweling et al. 2013; Orissa (now Odisha) and Jharkhand states, India	Women's groups, meeting monthly, guided by a facilitator over three years using participatory learning and action cycle. Maternal, newborn and child health problems identified, strategies developed, implemented and evaluated by the	Secondary analysis of cluster randomised controlled trial. Prospective demographic surveillance in intervention and control areas. Interview at around six weeks postpartum with all women giving birth in study area. Study area population: population of 228,186.	- Maternal literacy - PCA-based asset index - Land ownership - Caste/tribe - Combined SEP measure, comparing "most marginalised" (i.e. illiterate, *and* very poor,	Random effects logistic regression, estimating intervention effects separately for most and less marginalised, and testing for differences in effects between these	**Coverage:** similar across SEP groups. Women's group attendance coverage: 11% and 15% in year 1 to 59% and 52% in year 3, in the most and less marginalised, respectively. **Effects on behaviours:** No effects on food intake during pregnancy, thermal care (except wrapping), breastfeeding, and health care use in either SEP group. Comparable effects in low and high SEP on the following hygienic behaviors:

	groups, with support of wider community.	*High quality*	*and* had little or no land, *and* belonged to Scheduled Tribes or Scheduled Castes), with "less marginalised" (i.e. all other women).	groups.	- Hand washed with soap by birth attendant: for marginalised OR: 4.30 (95% CI: 1.95, 9.44) vs less marginalised OR: 3.60 (95% CI: 1.67, 7.78), p-value for difference=0.166. - Used plastic sheet: for marginalised OR: 3.59 (95% CI: 2.05, 6.31) vs less marginalised OR: 3.80 (95% CI: 2.24, 6.47), p-value for difference=0.712. - Used new/boiled blade to cut umbilical cord: for marginalised OR: 1.77 (95% CI: 0.98, 3.19) vs less marginalised OR: 1.79 (95% CI: 1.01, 3.19), p-value for difference=0.916. - Used boiled thread to tie cord: for marginalised OR: 6.12 (95% CI: 2.65, 14.1) vs less marginalised OR: 5.27 (95% CI: 2.34, 11.88), p-value for difference=0.293. Stronger effects in low SEP: - % of home deliveries for which all hygienic practices were used (hand washing, plastic sheet, new/boiled blade, boiled thread, cord undressed or dressed with antiseptic): for marginalised OR: 26.87 (95% CI: 7.85, 92.02) vs less marginalized OR: 8.23 (95% CI: 3.37, 20.09), p-value for difference=0.018. Small absolute effect. **Effects on neonatal mortality:** - NMR: stronger effect in most marginalised (OR: 0.41; 95% CI: 0.28, 0.59) than in less marginalised (OR: 0.64; 95% CI: 0.51, 0.80), p-value for difference=0.028 in year 2-3 combined. Year 3: most marginalised OR: 0.30, and less marginalised OR: 0.65, p-value for difference=0.009. Consistently

					stronger - but not statistically significantly different - intervention effects by literacy, assets, and ownership, and caste/tribe. The stronger effect on the most marginalised was concentrated in winter, particularly for early NMR.
Houweling et al. 2016; India, Nepal, Bangladesh and Malawi	Women's groups guided by local facilitators using participatory learning and action cycles to improve care-seeking, newborn care practices, and maternal and neonatal mortality.	Seven cluster randomised controlled trials, and qualitative focus group discussions and key informant interviews Quantitative sample: 70 574 pregnancies; Qualitative: 225 FGDs with participating and non-participating women and 20 in-depth interviews *High quality*	Socio-economic position (SEP): maternal education and wealth quintiles; Socio-demographic position: maternal age and gravidity	Random effects logistic regression, time trends and Wald tests.	**Coverage:** Socio-economic differences in women's group attendance were small, except for sometimes lower attendance among the most educated (OR: 0.92, 95% CI: 0.44, 1.93) and wealthiest women (OR: 1.19, 95% CI: 0.62, 2.29). Increases in attendance over the years were at least as high among lower as higher socio-economic groups. Qualitative results found that women of all socio-economic groups felt the intervention was relevant and interesting. The equitable effects were attributable to 'soft targeting': facilitators encouraging all to attend, accessible and convenient for lower socio-economic groups, and meeting a perceived need. Family support and quality of facilitators were important to enhance effects.
Houweling et al. 2017; India, Nepal, Bangladesh, Malawi	Geographical clusters allocated to intervention or control arms. Participatory learning and action groups were set up in the intervention areas. The groups identified and prioritised maternal and newborn health problems, and	A meta-analysis of four participatory women's group interventions that were shown to be highly effective in cluster randomised controlled trials in India (Jharkhand & Odisha), Nepal, Bangladesh-trial 2, and Malawi. Secondary analyses	PCA-based asset index. Combined SEP measure comparing: "most marginalised" (women who were illiterate *and* poor) and "less marginalised" (all other women).	Random effects logistic regression, estimating intervention effects (adjusted for baseline differences in the outcomes), separately for most and less	**Effects on behaviors:** - Institutional delivery: no effects in low or high SEP. - Home care practices (hygiene, delayed bathing, thermal care and breastfeeding): strong effects (improvements) everywhere except Malawi, with no systematic socio-economic differences in effect.

| | developed and evaluated strategies to address them. These included home visits to pregnant women, emergency funds, arrangements for emergency transport to a facility, and the preparation and distribution of safe delivery kits. The groups met monthly guided by a local facilitator for two to three years. Group members also made home visits to non-members to share what they discussed at groups. | (results not reported here) with all six published women's group trials, including two trials (Bangladesh trial 1, Mumbai-India) that had insufficient population coverage to be able to have an effect on NMR.

69,120 live births and 2505 neonatal deaths were included.

High quality | | marginalised; testing for differences in effects between these groups.

Separate analyses for each trial (NMR and behaviours) and pooled analyses (NMR) for all trials combined. | **Effects on neonatal mortality:**

Meta-analysis findings:

- NMR: strong intervention effects in lower SEP (50 to 63% reduction depending on SEP measure used) and in higher SEP (35 to 44% reduction). For most marginalised, 63% reduction (95% CI: 48-74%) and for less marginalised, 35% reduction (95% CI: 15-50%) in last trial year (p-value for difference=0.009).
- Early NMR: strong effects on low and high SEP, no differences in effect. Most marginalised OR: 0.39 (95% CI: 0.26, 0.59) vs less marginalised OR: 0.56 (95% CI: 0.41, 0.77), p-value for difference=0.171. Illiterate OR: 0.50 (95% CI: 0.36, 0.71) vs literate OR: 0.47 (95% CI: 0.32, 0.68), p-value for difference=0.783. Poorest OR: 0.48 (95% CI: 0.35, 0.66) vs less poor OR: 0.47 (95% CI: 0.31, 0.70), p-value for difference=0.929.
- Late NMR: strong effects for low socio-economic groups only; (borderline) statistically significant differences in effect between low/high socio-economic groups. Most marginalised OR: 0.28 (95% CI: 0.15, 0.52) vs less marginalised OR: 0.93 (95% CI: 0.58, 1.49), p-value for difference=0.003. Illiterate OR: 0.43 (95% CI: 0.26, 0.71) vs literate OR: 0.80 (95% CI: 0.45, 1.41), p-value for difference=0.107. Poorest OR: 0.44 (95%: CI 0.27, 0.71) vs less poor OR: 0.94 (95% CI: 0.52, 1.69), p-value for difference=0.051.
- Among women not attending the |

					groups, effects on NMR were similar or only somewhat smaller in the less compared to more marginalised group.

The intervention design likely played a role by combining universal coverage and "soft targeting" by meeting in convenient places for poorer women, using accessible methods and language, and focusing on simple home-based practices that were important for newborn survival. The intervention was only effective when implemented with sufficient coverage, duration and intensity. Involving the wider community may have facilitated the diffusion of knowledge and practices. |
| *Målqvist et al. 2016; Quang Ninh province, northern Vietnam* | Neonatal Health— Knowledge Into Practice (NeoKIP) trial recruited and trained local women from women's union to be facilitators to conduct Plan-Study-Do-Act cycles with groups of local stakeholders (health centre staff, women's union members, decision makers and lay health workers). Groups identified local issues related to maternal and newborn care and implemented targeted activities to improve them. | Cluster randomised controlled trial.

Semi-structured interviews conducted at baseline (2008) and endline (2011) with: all women who had lost a newborn within the study period (185 in intervention and 185 in control areas), and a representative sample of 6% of all live births within 6-8 weeks after delivery (656 in intervention and 587 in control areas).

High quality | Socio-economic ("structural") determinants:

- Household wealth (PCA index), grouped into poor (lowest quintile) and non-poor (four higher quintiles)

- Maternal education (no primary school and primary school or higher)

- Ethnicity (Kinh or minority groups) | Multi-level logistic regression adjusting for and then stratified by socio-economic determinants. | **Effects on neonatal mortality:**

NMR: In third year of intervention, significant reduction in intervention compared to control area overall (OR: 0.56, 95% CI: 0.36, 0.89).

- NMR in intervention vs control areas at endline significantly reduced for poor by 69% (OR: 0.31; 95% CI: 0.15, 0.66, p-value<0.001) but not for non-poor. The reverse was observed by maternal education: 50% (OR: 0.50; 95% CI: 0.28, 0.90) risk reduction among infants of women with at least primary education vs no effect among infants of women with less than primary education.
- Comparing baseline vs endline, went from significantly to not significantly higher NMR for poor vs non-poor in intervention area (baseline OR: 2.31, 95% CI: 1.12, 4.78 vs endline OR: 1.60; 95% CI: 0.60, 4.26). Control area baseline, no significant difference |

					(baseline OR: 1.52; 95% CI: 0.76, 3.07), and at endline significantly lower NMR for non-poor than poor (endline OR: 6.28; 95% CI: 3.17, 12.40). - Comparing baseline vs endline in intervention area, went from higher NMR among those with primary school or higher than those without primary school (baseline OR: 0.83, 95% CI: 0.37, 1.85) to lower NMR among those with primary school or higher vs no primary school (endline OR: 2.60, 95% CI: 0.84, 8.05). In control areas, those with primary school or higher had lower NMR than those without primary school at both baseline and endline (baseline OR: 2.26; 95% CI: 1.11, 4.61 vs endline OR: 2.31; 95% CI: 1.10, 4.85). - Comparing baseline and endline, in the intervention area at both baseline and even more at endline, minority ethnic groups had significantly higher NMR than Kinh ethnic group (baseline OR: 2.38; 95% CI: 1.20, 4.71 vs endline OR: 3.42; 95% CI: 1.19, 9.98). In control areas, non-significant but higher NMR among minority than Kinh ethnic groups in intervention (baseline OR: 1.72; 95% CI: 0.82, 3.60; endline OR: 1.44; 95% CI: 0.70, 2.97). Reductions in wealth inequities in NMR may be explained by groups being largely comprised by poorer members who could focus on issues they faced. The lack of equitable improvements by education may be because groups focused on actions that improved knowledge more than practices, allowing more educated women to benefit most even if targeted to the poorest.

Mixed interventions					
Huq et al. 2015; Sirajgong district, Bangladesh	Volunteer trained community skilled birth attendants provide counseling, safe delivery kits, information on emergency preparedness and safe home care practices. Community mobilisation through Community Support Groups meeting monthly.	Repeated cross-sectional study, with pre- and post-surveys in 2009 and 2012 respectively. 3158 and 3431 mothers who delivered live or stillborn babies in baseline and endline surveys respectively. *Moderate quality*	Explanatory socio-economic variables: maternal age, parity, PCA-based asset index for socio-economic status, poverty index, and husband's education. High, medium and low performing areas defined based on area's baseline socio-economic status and skilled birth attendance.	Descriptive and chi-square analyses. Separate logistic regression models by area performance level.	**Effects on behaviours**: more improvements in areas with low performance at baseline. 4+ ANC by skilled providers: Improved significantly from baseline to endline in low performing area (1.6 to 15.3%, p<0.001). Baseline to endline, significantly greater change in low compared to high performing areas (OR: 7.2; 95% CI: 3.6, 14.3) compared to high performing area (OR: 1.9; 95% CI: 1.1, 3.3) after adjusting for socio-economic characteristics. Skilled birth attendance: Improved significantly from baseline to endline in low performing areas (12.6% to 38.3%, p<0.001). Baseline vs endline change greater in low performing areas (OR: 4.9; 95% CI: 3.3, 7.2), than in high performing areas (OR: 1.7; 95% CI: 1.3, 2.3), after adjusting for socio-economic characteristics. Any PNC by skilled provider within 42 days after delivery: Improved significantly from baseline to endline in low performing area (1.0% to 19.8%; p-value<0.001). Baseline to endline, both significant but even greater change in high performing area (OR: 23.6; 95% CI: 8.5, 65.6) compared to low performing area (OR: 3.6; 95% CI: 0.7, 18.6), after adjusting for socio-economic characteristics. They noted that long distances to emergency care and transport continued to be barriers to accessing maternal health services from skilled providers.

Sousa et al. 2013; Brazil	National programme Sistemo Unico de Saude started in 1988 to encourage universalised access to public facilities through support of CHWs.	Cross sectional surveys using a panel data set from 1991 and 2000. Data on neonatal mortality per 1000 live births for 1991 and 2000 (from Sousa et al. 2010). All 4267 Minimum Comparable Areas in Brazil. *Low quality*	Poor Minimal Comparable Areas were those with more than 50% of population below the poverty line. Controlled for 16 characteristics of the Minimal Comparable Areas (levels of poverty, urbanisation and population density).	Fixed-effect regression models separately for distributions of physicians, nurse professionals/ associates, and CHWs. Predictive models of trend in neonatal mortality from 1991-2005 in poor and non-poor areas.	**Effects on neonatal mortality**: Significant relationship between higher density of CHWs and greater neonatal mortality overall. - Decrease in one community health worker per 1000 population associated with a 1.25% reduction in neonatal mortality overall (p<0.001), but had no association in poor areas. - Density of all health workers significantly related to lower NMR in rich areas, except for CHWs, which had a significant relationship with higher mortality (p<0.01). - Poverty level for all areas was independently associated with higher NMR (p<0.001).